

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-3, 6-8, and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al (US-5759671) in view of Watanabe et al (US-5818640).**

As to claims 1, 2, 6, 7, 11, and 12, Tanaka teaches a traffic sign apparatus in figure 8 comprising a sign body 13 with a sign surface that emits light by ultraviolet irradiation. Tanaka includes a irradiation device 14 for irradiating the sign surface. Tanaka lacks teaching the specific angle ranges or the linear dimension ratio ranges recited in the claims. Watanabe et al teaches a road sign that is illuminated by a light source. Watanabe et al teaches the particular importance of the position and angle of the light source relative to the display surface as it effects the illumination of the sign surface. Since the design criteria and control variables were known in the art of road sign illumination, the specific dimensions claimed are mere optimization of dimensions, which is within the ordinary capabilities of one skilled in the art and would have yielded predictable results at the time of the invention.

As to claims 3, 8, and 13, Tanaka teaches a plurality of UV emitting elements 14, having different irradiation angles relative to the sign surface.

**Claims 4, 9, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al (US-5759671) in view of Watanabe et al (US-5818640) and further in view of Ward (US-2015170).**

Tanaka lacks specific teaching of quartz tubes. Ward teaches that it is well known in the art of UV radiation sources that quartz tubes are preferred since quartz does not fatigue and become non-transparent to UV light over time (see Ward, column 3, lines 54-61). It would therefore have been obvious to one of ordinary skill in the art to use quartz tube UV emitting elements.

**Claims 5, 10 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al (US-5759671) in view of Watanabe et al (US-5818640) and further in view of Kochanowski (US-6029382).**

Tanaka does not teach "dirt-proof processing". Kochanowski teaches a reflective road sign that is coated with silicone, acrylic, or TEFLON to make the surface resistant to dirt, damage, and vandalism (Kochanowski, column 6, lines 19-32). It would have been obvious to one of ordinary skill in the art to coat the Tanaka device with a dirt-proof coating, since it is intended for use outdoors, where dirt is a well known problem. Kochanowski lacks teaching that this dirt-proof coating is transparent. However, since the coating is to cover the display surface of the sign, it must be inherently transparent, lest the sign fail to function as a sign. If not inherent, transparency of the coating would at least have been obvious, in order to ensure that the sign is visible and effective.

### ***Response to Arguments***

Applicant's arguments filed 3/5/10 have been fully considered but they are not persuasive.

The applicant argues that optimization of dimensions is not obvious where the result of altering those dimensions is not obvious. That is, "A particular parameter must first be recognized as a result-effective variable..." (*in re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977)). The applicant then asserts that incidence angle is not recognized by the art, i.e. Watanabe, as a results-effective variable. However, the applicant does admit that Watanabe recognizes that the position of the floodlight generating the incident radiation to a retroreflective sign is a results-effective variable. One skilled in the art would recognize that the position of a floodlight affects the angle of incidence. Furthermore, Watanabe et al explains that the retroreflective sign surface is most effective for certain ranges of incident angles and observation angles. (Watanabe, column 1, lines 55-65). The examiner asserts that there is enough teaching of the effects of the relative positions and angles of the light source to the sign surface to suggest that the incident angle could be optimized.

The applicant argues that there is no disclosure in the Tanaka reference of the UV lamps having different irradiation angles. The lamps 14 are shown in figure 8 located at different positions relative to the sign face, and hence inherently have different irradiation angles.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER E. VERA whose telephone number is (571)272-2329. The examiner can normally be reached on Monday through Friday, 8:00 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lesley Morris can be reached on 571-272-6651. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. E. V./  
Examiner, Art Unit 3611

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